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## قائمة الاسئلة

ذكاء اصطناعي - المستوى الرابع -قسم نظم معلومات - بكلية الحاسوب وتكنولوجيا المعلومات - الفترة بدرجة الامتحان (68)

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- 1) What is the primary goal of Artificial Intelligence?
  - 1) To replace human intelligence
  - 2) + To create an intelligent agent that can solve complex problems
  - 3) To automate all human tasks
  - 4) To mimic human emotions
- 2) Which of the following is an example of an intelligent agent?
  - 1) A calculator
  - 2) + A self-driving car
  - 3) A simple chatbot
  - 4) A video game character
- 3) Which AI concept involves a machine's ability to simulate human conversation?
  - 1) Image Processing
  - 2) + Natural Language Processing
  - 3) Knowledge Representation
  - 4) Machine Vision
- 4) What is a major limitation of the Turing Test?
  - 1) + It cannot measure creativity
  - 2) It only applies to robots
  - 3) It requires physical embodiment
  - 4) It is too simple to test intelligence
- 5) Which field is closely related to AI but focuses on understanding human cognition?
  - 1) Machine Learning
  - 2) Robotics
  - 3) + Cognitive Science
  - 4) Game Theory
- 6) Which component is essential for an intelligent agent?
  - 1) Ability to play chess
  - 2) Rule-based decision-making
  - 3) + Interaction with the environment
  - 4) Human-like appearance
- 7) Which of the following is NOT one of the four main AI approaches?
  - 1) Thinking like a human
  - 2) Acting like a human
  - 3) + Thinking randomly
  - 4) Acting rationally
- 8) What does the Turing Test aim to evaluate?
  - 1) The ability of an AI to solve mathematical problems
  - 2) + Whether an AI can deceive human judges into thinking it is human
  - 3) The ethical implications of AI
  - 4) Whether AI can perform rational thinking
- 9) Which thought experiment critiques AI's ability to truly understand language?
  - 1) \_\_\_\_ Turing Test
  - 2) + Chinese Room Argument
  - 3) Moravec's Paradox
  - 4) Optimization Theory



11)





- 10) According to the cognitive approach, which method is used to understand human thinking?
  - 1) Observing animal behavior
  - 2) + Examining neurological data
  - 3) Writing AI programs
  - 4) Running chess simulations
  - What is a key critique of the Turing Test?
    - 1) It focuses too much on ethics
    - 2) It does not account for human irrationality
    - 3) + It can be fooled by non-intelligent behavior
    - 4) It only applies to chess-playing AI
- 12) Which concept suggests that AI may act intelligently but not truly understand what it is doing?
  - 1) Optimization Theory
  - 2) Rational Agent Model
  - 3) + Chinese Room Argument
  - 4) Neural Networks
- 13) What distinguishes "thinking rationally" from "acting rationally" in AI?
  - 1) + Thinking rationally means following logic; acting rationally means achieving the best outcome
  - 2) Thinking rationally requires emotions, while acting rationally does not
  - 3) Thinking rationally is about mimicking humans, while acting rationally is about unpredictability
  - 4) They are the same concept
- 14) The Turing Test evaluates if an AI system can convincingly imitate human intelligence.
  - 1) + TRUE.
  - 2) FALSE.
- 15) Acting rationally means trying to achieve the best possible outcome, even under uncertainty.
  - 1) + TRUE.
  - 2) FALSE.
- 16) What defines an intelligent agent?
  - 1) \_\_\_\_ An entity that can act randomly
  - 2) + A system that perceives its environment and acts upon it
  - 3) A program that only follows human instructions
  - 4) A rule-based chatbot
- 17) What does a rational agent aim to do?
  - 1) \_ \_ Always act perfectly
  - 2) + Maximize expected performance based on percepts and knowledge
  - 3) Avoid mistakes at all costs
  - 4) Follow predefined rules without learning
- 18) Which of the following is NOT part of the PEAS framework?
  - 1) Performance measure
  - 2) Environment
  - 3) Actuators
  - 4) + Artificial intelligence
- 19) What distinguishes a model-based reflex agent from a simple reflex agent?
  - 1) \_\_\_\_ It ignores past percepts
  - 2) + It maintains an internal state to track unobservable aspects of the environment
  - 3) It does not need sensors
  - 4) It always acts randomly
- 20) Which type of environment allows an agent to perceive the entire state at any given time?
  - 1) Partially observable
  - 2) + Fully observable





- 3) Stochastic
- 4) Dynamic
- 21) What type of agent is a thermostat that adjusts temperature based only on current input?
  - 1) Model-based reflex agent
  - 2) + Simple reflex agent
  - 3) Goal-based agent
  - 4) Utility-based agent
- 22) Which type of AI agent uses search algorithms to achieve a defined goal state?
  - 1) Reflex agent
  - 2) + Goal-based agent
  - 3) Utility-based agent
  - 4) Learning agent
- 23) Which of the following is an example of a dynamic environment?
  - 1) \_ Chess game
  - 2) + Self-driving car navigation
  - 3) Sudoku puzzle
  - 4) Word jumble solver
- 24) What kind of agent adapts over time by modifying its own program?
  - 1) Reflex agent
  - 2) + Learning agent
  - 3) Model-based agent
  - 4) Simple agent
- 25) What differentiates a stochastic environment from a deterministic one?
  - 1) + Stochastic environments contain randomness, while deterministic ones do not
  - 2) Stochastic environments always require human input
  - 3) Deterministic environments cannot be fully observable
  - 4) Stochastic environments are always dynamic
- 26) A rational agent is always perfect in decision-making.
  - 1) <u>-</u> TRUE.
  - 2) + FALSE.
- 27) A model-based agent maintains internal state information to help with decision-making.
  - 1) + TRUE.
  - 2) FALSE.
- 28) A reflex agent can plan ahead and adjust its actions based on long-term goals.
  - 1) **-** TRUE.
  - 2) + FALSE.
- 29) A self-driving car operates in a dynamic, partially observable, and stochastic environment.
  - 1) + TRUE.
  - 2) FALSE.
- 30) A <u>utility</u>-based agent selects actions based on maximizing future rewards.
  - 1) + TRUE.
  - 2) FALSE.
- 31) What is the primary goal of a goal-based agent in search problems?
  - 1) To explore the entire search space
  - 2) + To reach a defined goal state efficiently
  - 3) To act randomly in an environment
  - 4) To use brute force algorithms only
- 32) What are the two main phases of solving a search problem?
  - 1) Observation and learning



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- 2) + Search/Planning and Execution
- 3) Memory allocation and execution
- 4) State representation and optimization
- 33) What is the transition function responsible for in a search problem?
  - 1) Defining the goal state
  - 2) + Determining the available actions in each state
  - 3) Measuring the optimality of a solution
  - 4) Choosing the best heuristic function
- 34) Which of the following is NOT a characteristic of a well-defined search problem?
  - 1) Initial state
  - 2) Goal state
  - 3) Performance measure
  - 4) + User-defined constraints
- 35) Which search problem example represents a continuous state space?
  - 1) 8-puzzle problem
  - 2) Tic-tac-toe
  - 3) + Robot motion planning
  - 4) Vacuum world
- 36) What is the main issue with constructing a search tree for solving search problems?
  - 1) \_\_\_\_ The state space graph is too small
  - 2) + Redundant paths and cycles
  - 3) Lack of transition functions
  - 4) Search trees only work in stochastic environments
- 37) What is the difference between tree search and AI search?
  - 1) + AI search manages memory efficiently and avoids cycles
  - 2) Tree search can be applied to real-world problems, but AI search cannot
  - 3) Tree search uses heuristics, while AI search does not
  - 4) AI search always produces optimal solutions
- 38) What is the frontier in a search algorithm?
- 1) The initial state of the search
  - 2) + A set of unexplored known nodes
  - 3) The optimal path to the goal
  - 4) The final step of the search
  - Which search strategy expands the shallowest unexpanded node first?
  - 1) Depth-first search
  - 2) + Breadth-first search
  - 3) A\* search
  - 4) Best-first search
- 40) What distinguishes uniform-cost search from breadth-first search?
  - 1) + a) Uniform-cost search accounts for path costs
  - 2) b) Uniform-cost search expands the deepest node first
    - c) Uniform-cost search always finds the longest path
  - 4) d) Uniform-cost search does not guarantee completeness
- 41) Which heuristic function is commonly used for spatial search problems?
  - 1) BFS expansion rule
  - 2) + Manhattan distance
  - 3) Memory-based recursion
  - 4) Alpha-beta pruning
- 42) What is the main difference between greedy best-first search and A search?\*

39)

3)



3)



- 1) Greedy best-first search guarantees optimality
- 2) + A\* search uses both path cost and heuristics
  - Greedy best-first search avoids local minima
- 4) A\* search does not use heuristics
- 43) A goal-based agent searches for a sequence of actions that reach a goal state.
  - 1) + TRUE.
  - 2) FALSE.
- 44) An optimal solution in search problems always involves the shortest possible path.
  - 1) <u>-</u> TRUE.

2) + FALSE.

- 45) A deterministic environment means the agent's actions always produce predictable results.
  - 1) + TRUE.
  - 2) FALSE.
- 46) A search tree and a state space graph are exactly the same.
  - 1) <u>-</u> TRUE.
  - 2) + FALSE.
- 47) Depth-first search is guaranteed to find the shortest path in a graph.
  - 1) \_\_\_\_\_ TRUE.
  - 2) + FALSE.
- 48) Breadth-first search guarantees finding an optimal solution if all step costs are equal.
  - 1) + TRUE.
  - 2) FALSE.
- 49) The heuristic function in informed search provides guidance to reduce search time.
  - 1) + TRUE.
  - 2) FALSE.
- 50) Uniform-cost search expands the shallowest nodes first, similar to BFS.
  - 1) <u>-</u> TRUE.
  - 2) + FALSE.
- 51) Iterative deepening search combines the benefits of BFS and DFS.
  - 1) + TRUE.
  - 2) FALSE.
- 52) What is the primary purpose of a Genetic Algorithm (GA)?
  - 1) \_\_\_\_ To simulate human thinking
  - 2) + To optimize solutions through evolutionary principles
  - 3) To replace traditional programming techniques
  - 4) To generate random solutions to a problem
- 53) In a Genetic Algorithm, what is a chromosome?
  - 1) A biological sequence of DNA
  - 2) A single bit in the algorithm
  - 3) + A candidate solution to a problem
  - 4) The environment in which the algorithm operates
- 54) Which of the following is NOT a component of a Genetic Algorithm?
  - 1) Selection
  - 2) + Backpropagation
  - 3) Mutation
  - 4) Crossover
- 55) What is the function of the selection process in Genetic Algorithms?
  - 1) To randomly eliminate weak solutions
  - 2) + To pick chromosomes based on their fitness for reproduction



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- 3) To mutate chromosomes randomly
- 4) To generate new random chromosomes
- 56) Which selection method gives higher-fit chromosomes a greater chance of reproduction?
  - 1) Random selection
  - 2) Uniform selection
  - 3) + Roulette-Wheel selection
  - 4) Backward selection
- 57) What does crossover do in a Genetic Algorithm?
  - 1) Creates a completely new chromosome
  - 2) \_\_\_\_ Modifies a chromosome by flipping a bit
  - 3) + Combines genetic material from two parent chromosomes
  - 4) Deletes unfit chromosomes from the population
- 58) What is the role of mutation in a Genetic Algorithm?
  - 1) + To randomly alter genes to introduce diversity
  - 2) To remove unfit individuals
  - 3) To select the best individuals
  - 4) To combine two chromosomes into one
- 59) Which of the following best describes a single-point crossover?
  - 1) A random mutation applied to a chromosome
  - 2) + A cut at one location in both parents to swap genetic material
  - 3) Randomly flipping genes in the chromosome
  - 4) Replacing the entire population with new random chromosomes
- 60) What is the stopping criteria for a Genetic Algorithm?
  - 1) When all individuals have identical fitness
  - 2) When a maximum number of generations is reached
  - 3) When a predefined fitness threshold is met
  - 4) + All of the above
- 61) What is an important characteristic of Genetic Algorithms compared to traditional optimization methods?
  - 1) They require a pre-defined solution
  - 2) They only work on numerical problems
  - 3) + They explore multiple solutions simultaneously
  - 4) They do not require a fitness function
- 62) Genetic Algorithms operate on a single solution at a time.
  - 1) TRUE.
  - 2) + FALSE.
- 63) Mutation introduces new genetic material into the population.
  - 1) + TRUE.
  - 2) FALSE.
- 64) Roulette-Wheel selection always chooses the best solution with certainty.
  - 1) \_\_\_\_\_ TRUE.
  - 2) + FALSE.
- 65) Crossover is the only method by which new solutions are introduced in a Genetic Algorithm.
  - 1) TRUE.
  - 2) + FALSE.
- 66) Genetic Algorithms can be used in machine learning, economics, and optimization problems.
  - 1) + TRUE.
  - 2) FALSE.
- 67) In a Genetic Algorithm, fitness evaluation determines how well a chromosome solves a given problem. 1) + TRUE.





- 2) FALSE.
- 68) Multiple-point crossover involves swapping genetic material at multiple locations between parent chromosomes.
  - 1) + TRUE.
  - 2) FALSE.